AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 15, and 22 as shown below, where deletions are indicated by a strikethrough font and insertions are indicted by an underline font.

1. (Currently Amended) A solid-state pulse generator, comprising:

a plurality of transformer cores, each core including a single-turn primary winding;

a plurality of core drivers, each of said core drivers configured to produce a primary pulse and provide said primary pulse to at least one of said single-turn primary windings;

a pulse generator configured to produce a drive pulse for driving the plurality of ~~one~~ core drivers, each of said core drivers producing one primary pulse in response to said drive pulse, said drive pulse being longer in time than said primary pulse; and

an output secondary winding, said output secondary winding linking substantially all of said transformer cores.

2. (Original) The solid-state pulse generator of Claim 1, wherein each of said core drivers uses at least one blumlein to store energy for said primary pulse.

3. (Original) The solid-state pulse generator of Claim 2, wherein said blumlein is recharged after an end of said drive pulse.

4. (Original) The solid-state pulse generator of Claim 2, wherein said blumlein is discharged by a solid-state switching device.

5. (Original) The solid-state pulse generator of Claim 4, wherein said solid-state switching device comprises a MOSFET.

6. (Original) The solid-state pulse generator of Claim 5, wherein said drive pulse is provided to a primary winding of a pulse transformer and wherein a gate of said MOSFET is driven by a secondary winding of said pulse transformer.

7. (Original) The solid-state pulse generator of Claim 1, wherein said output secondary winding is a multi-turn winding.

8. (Original) The solid-state pulse generator of Claim 1, wherein each of said core drivers comprises:

a plurality of solid-state switches; and

first and second lumped-element transmissions lines connected as a blumlein, said first lumped-element transmission lines switched to ground by said plurality of solid-state switches, said second lumped-element transmission line coupled in series with said first lumped-element transmission line and one of said single-turn primary windings.

9. (Original) The solid-state pulse generator of Claim 8, wherein each of said core drivers further comprises a pulse-sharpening system.

10. (Original) The solid-state pulse generator of Claim 9, wherein said pulse-sharpening system comprises a saturable-core inductor.

11. (Original) The solid-state pulse generator of Claim 10, wherein said saturable core inductor comprises a ferrite bead.

12. (Original) The solid-state pulse generator of Claim 1, further comprising a pulse-sharpening device in series with each of said single-turn primary windings.

13. (Original) The solid-state pulse generator of Claim 12, wherein said pulse-sharpening device comprises a saturable-core inductor.

14. (Original) The solid-state pulse generator of Claim 12, wherein said pulse-sharpening device comprises a ferrite bead wrapped around a portion of said single-turn primary winding.

15. (Currently Amended) A modular solid-state pulse generator and split-core transformer system comprising:

a first core driver module configured to provide a primary winding drive pulse to one or more first connectors; and

a first transformer core assembly having a first primary winding provided to a one or more second connectors, said first connectors configured to be removably connectable to said second connectors to allow said core driver module to drive said first primary winding;

a second transformer core assembly having a second primary winding; and

a secondary winding that links **both** said first transformer core and said second transformer core.

16. (Original) The modular solid-state pulse generator and split-core transformer system of Claim 15, wherein said core driver module comprises a blumlein.

17. (Original) The modular solid-state pulse generator and split-core transformer system of Claim 15, wherein said first primary winding comprises a single-turn winding.

18. (Original) The modular solid-state pulse generator and split-core transformer system of Claim 15, wherein said secondary winding comprises a multi-turn winding.

19. (Original) The modular solid-state pulse generator and split-core transformer system of Claim 15, further comprising a load, said secondary winding configured to deliver power to said load.

20. (Original) The modular solid-state pulse generator and split-core transformer system of Claim 15, said secondary winding configured to substantially an impedance of said load by adjusting a number of turns in said secondary winding.

21. (Original) The modular solid-state pulse generator and split-core transformer system of Claim 15, wherein said core driver module comprises a blumlein controlled by a solid-state switch.

22. (Currently Amended) A pulse generator, comprising:

a first transformer core having a first primary winding;

a second transformer core having a second primary winding;

a core driver which produces a primary pulse and provides said primary pulse to said first primary winding, said core driver comprising a blumlein; and

a secondary winding that links **both** said first transformer core and said second transformer core.

23. (Original) The pulse generator of Claim 22, wherein said blumlein comprises first and second inductors.

24. (Original) The pulse generator of Claim 23, wherein said first inductor comprises multiple turns with a capacitor provided to each turn.

25. (Original) The pulse generator of Claim 22, wherein said core driver further comprises a snubber, said snubber comprising a resistor with a resistance substantially equal to an impedance of said blumlein.

26. (Original) The pulse generator of Claim 22, further comprising a pulse sharpener, said pulse sharpener comprising a saturable core inductor in series with said blumlein.

27. (Original) The pulse generator of Claim 22, wherein said blumlein is switched by a solid-state switch comprising a MOSFET, said MOSFET having a gate, said gate

driven by a pulse transformer, said pulse transformer driven by a pulse generator, said pulse generator driven by a master trigger.

28. (Original) A pulse generator system comprising:

a first magnetic core having a first primary winding;

a second magnetic core having a second primary winding;

a secondary winding wound through at least said first magnetic core and said second magnetic core;

a first core driver which drives said first primary winding with a first drive pulse in response to a trigger pulse;

a second core driver which drives said second primary winding with a second drive pulse in response to said trigger pulse; and

a trigger-pulse generator for generating said trigger pulse, said trigger pulse being longer in time than said drive pulse.

29. (Original) The pulse generator system of Claim 28, further comprising:

a master trigger generator which generates a master trigger pulse, said master trigger pulse provided to said trigger-pulse generator, said trigger-pulse generator generating said trigger-pulse in response to said master trigger pulse.

30. (Original) The pulse generator system of Claim 28, wherein said first core driver comprises a first blumlein for generating said first drive pulse.

31. (Original) The pulse generator system Claim 30, wherein said trigger-pulse generator comprises:

a solid state switch; and

a second blumlein, said second blumlein configured to generate a pulse at least twice a long in duration as a pulse generated by said first blumlein.

32 (Original) The solid state pulse generator of Claim 28, said first magnetic core comprising a toroidal core.

33 (Original) The solid state pulse generator of Claim 28, said first primary winding comprising a single-turn winding.

34 (Original) The solid state pulse generator of Claim 28, wherein said first core driver comprises a pulse transformer which comprises:

a toroidal core;

a three-conductor transmission line, said three-conductor transmission line comprising a first conductive layer, a second conductive layer, and a third conductive layer;

a first one-turn secondary winding wound on said toroidal core, a first terminal of said first one-turn secondary winding provided to said first conductive layer and a second terminal of said first one-turn secondary winding provided to said second conductive layer;

a second one-turn secondary winding wound on said toroidal core, a first terminal of said second one-turn secondary winding provided to said first conductive layer and a second terminal of said second one-turn secondary winding provided to said second conductive layer;

a third one-turn secondary winding wound on said toroidal core, a first terminal of said third one-turn secondary winding provided to said second conductive layer and a second terminal of said third one-turn secondary winding provided to said third conductive layer;

a fourth one-turn secondary winding wound on said toroidal core, a first terminal of said fourth one-turn secondary winding provided to said second conductive layer and a second terminal of said fourth one-turn secondary winding provided to said third conductive layer; and

a plurality of primary windings wound on said toroidal core.

35. (Original) A split-core transformer comprising:

a plurality of transformer cores each core having a separate primary winding, each of said separate primary windings linking only one of said transformer cores; and

a secondary winding, said secondary winding linking all of transformer cores, said transformer cores arranged in two columns of cores such that a shape of said secondary winding approximates an oval racetrack.

36. (Original) A split-core transformer comprising:

a plurality of transformer cores each core having a separate primary winding, each of said separate primary windings linking only one of said transformer cores; and

a secondary winding, said secondary winding linking two or more of said transformer cores, said transformer cores arranged in circular fashion such that a shape of said secondary winding approximates a circle.

37. (Original) A split-core transformer comprising:

a plurality of toroidal magnetic cores each core having a separate primary winding, each of said separate primary windings linking only one of said toroidal magnetic cores; and

a multi-turn secondary winding, said secondary winding linking all of toroidal magnetic cores, said secondary winding linking each of said toroidal magnetic cores once per turn.

38. (Original) A pulse generator apparatus, comprising:

a first magnetic core having a first primary winding;

a second magnetic core having a second primary winding;

means for generating a first pulse in said first primary winding in response to a drive pulse where a pulse length of said first pulse can be longer than a pulse length of said drive pulse;

means for generating a second pulse in said second primary winding in response to said drive pulse where a pulse length of said second pulse can be longer than a pulse length of said drive pulse and where said first pulse and said second pulse have substantially the same pulse length; and

an output secondary winding, said output secondary winding linking said first magnetic core and said second magnetic core.

AMENDMENTS TO THE DRAWINGS

The present application was filed with informal drawings. Replacement formal drawings are submitted herewith in 20 pages. These changes add no new matter as the content of the drawings has not changed.

SUMMARY OF INTERVIEW

Applicant thanks the Examiner for the telephone interview conducted on February 12, 2004. The telephone interview is summarized below.

Identification of Claims Discussed

Claims 22, and 35-37 were discussed.

Identification of Prior Art Discussed

The cited references to Blumlein, Robinson, Collier, and Cirkel were discussed

Principal Arguments and Other Matters

Applicant discussed the prior art with the Examiner. Applicant pointed out that the cited prior art does not teach or suggest the claimed invention, and that the claimed invention provides advantages and capabilities that are not found in the prior art. The absence of motivation to combine the references was also discussed.

Results of Interview

Applicant agreed to file a response to the office action mailed November 18, 2004 with arguments to distinguish the rejected claims from the cited prior art.